**Answer on question 35641 – Math – Calculus**

Compute the surface area generated by revolving the curve f(x)=2√x, 1<= x <= 4 about the x axis.

**Solution**

We will use the formula

$$S = 2\pi \int_a^b f(x)\sqrt{1 + \left(f'(x)\right)^2}\,dx$$

to find the surface area .

So we have

$$S = 2\pi \int_1^4 2\sqrt{x}\sqrt{1 + \left(\frac{1}{\sqrt{x}}\right)^2}\,dx = 4\pi \int_1^4 \sqrt{x+1}dx = 4\pi * \frac{2}{3}(x+1)^{\frac{3}{2}}\Big|_1^4 = \frac{8\pi}{3}\left(5\sqrt{5} - 2\sqrt{2}\right).$$

**Answer:** $\frac{8\pi}{3}\left(5\sqrt{5} - 2\sqrt{2}\right)$.